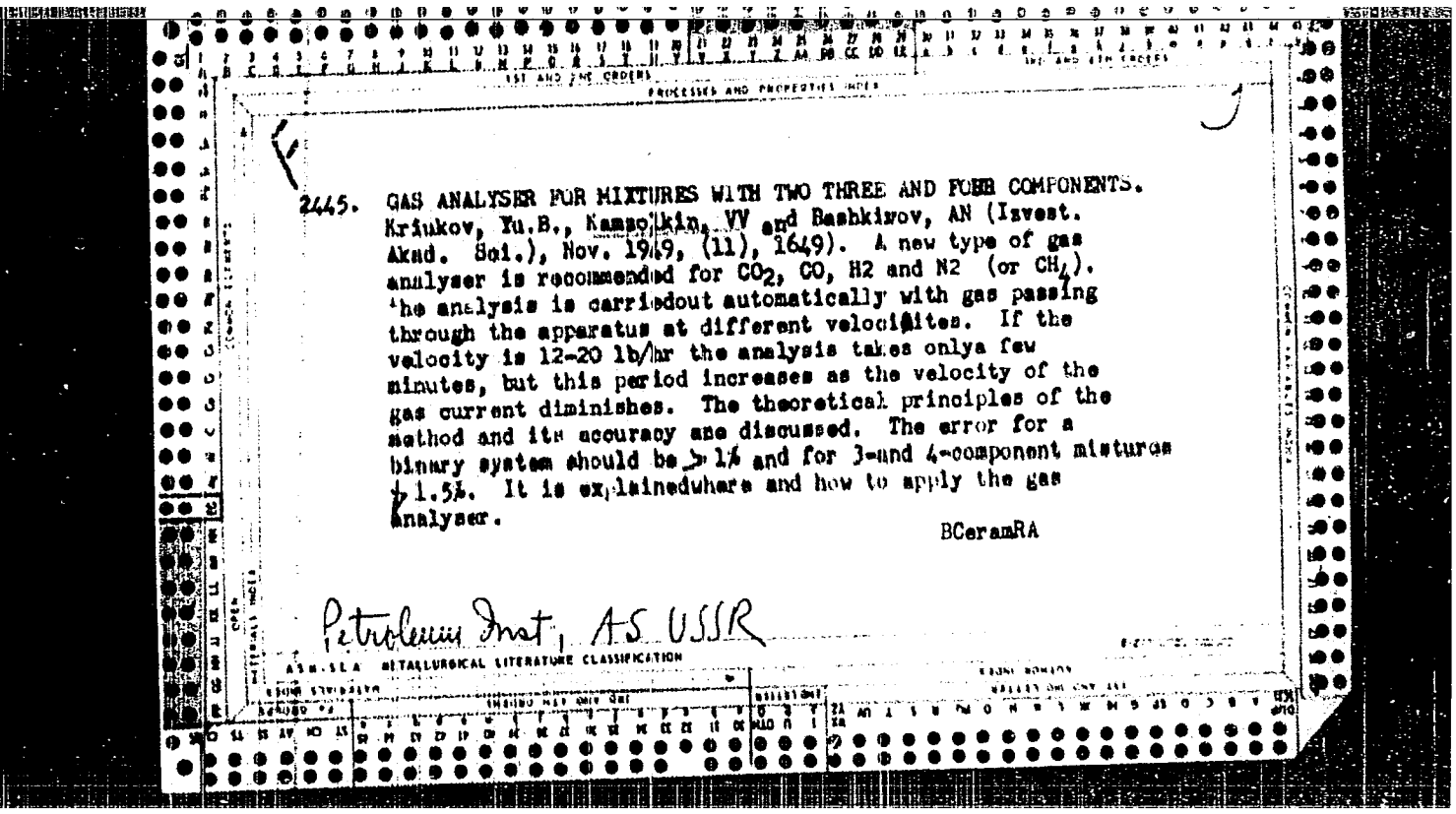

2445. GAS ANALYSER FOR MIXTURES WITH TWO THREE AND FOUR COMPONENTS. Kriukov, Yu.B., Kamaojkin, VV and Bashkirov, AN (Izvest. Akad. Sci.), Nov. 1949, (11), 1649). A new type of gas analyser is recommended for CO_2, CO, H2 and N2 (or CH_4). The analysis is carried out automatically with gas passing through the apparatus at different velocities. If the velocity is 12-20 lb/hr the analysis takes only a few minutes, but this period increases as the velocity of the gas current diminishes. The theoretical principles of the method and its accuracy are discussed. The error for a binary system should be $\pm$ 1% and for 3- and 4-component mixtures $\pm$ 1.5%. It is explained where and how to apply the gas analyser.

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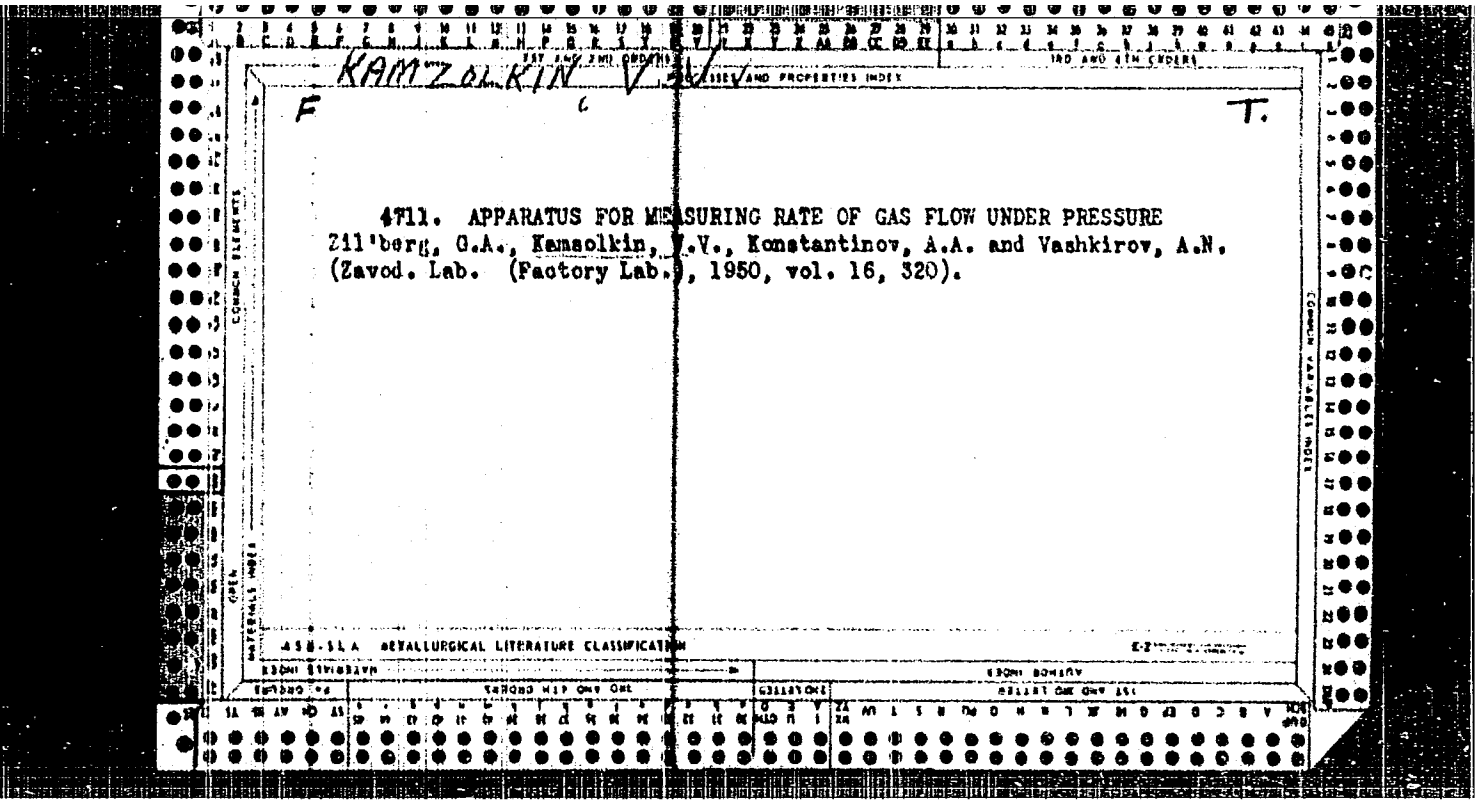
Petroleum Inst, AS USSR



KAMZOLKIN V.V.

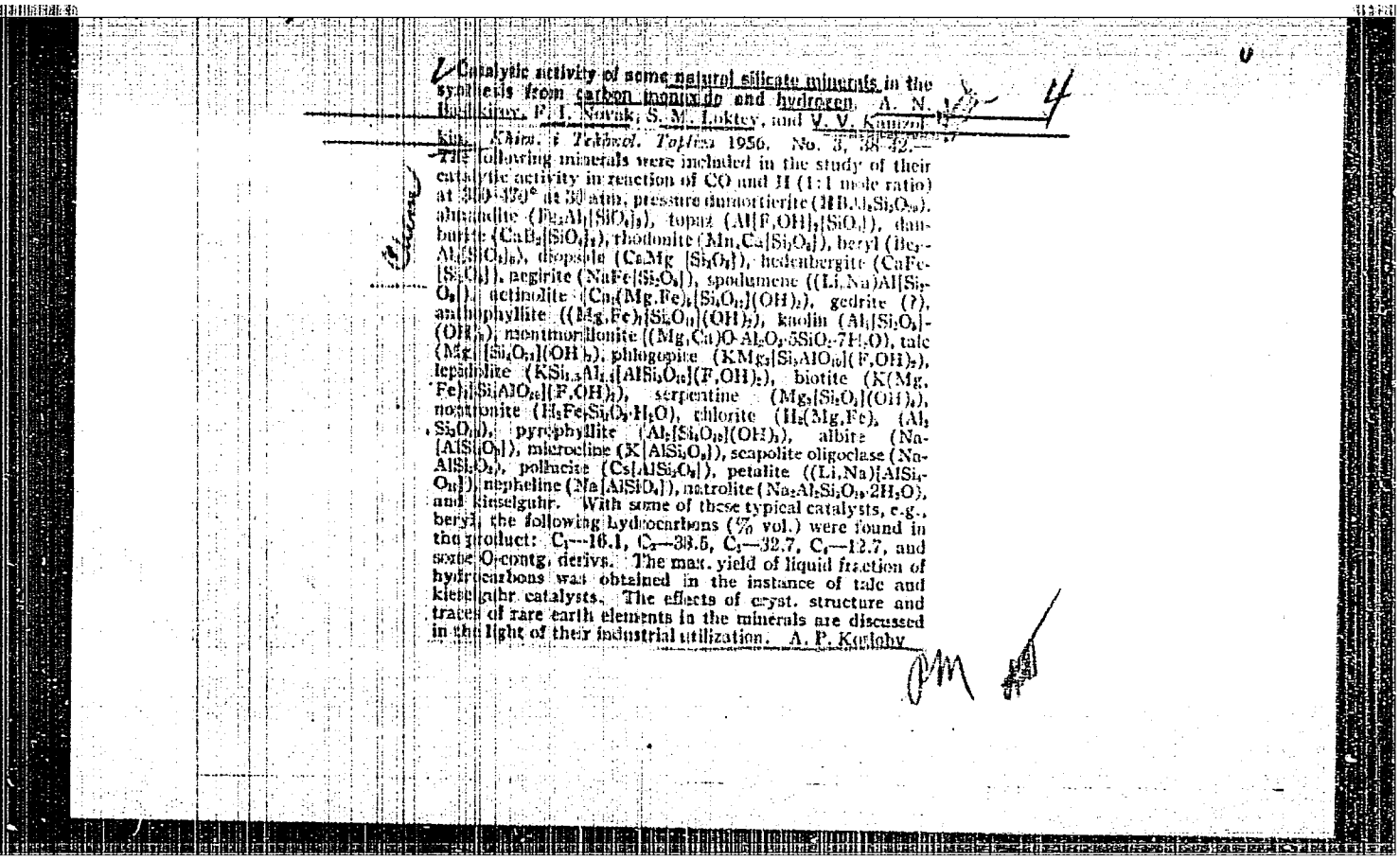
F C T.

4711. APPARATUS FOR MEASURING RATE OF GAS FLOW UNDER PRESSURE
Zil'berg, G.A., Kamsolkin, V.V., Konstantinov, A.A. and Vashkirov, A.N.
(Zavod. Lab. (Factory Lab.), 1950, vol. 16, 520).

Hydrogenation of hexene over a synthetic-ammonia, iron-alloy catalyst. A. N. Bashkirov, [illegible] Kamzolkin, [illegible]. *Trudy [illegible]* [illegible] (1950).—The capacity of the catalyst to reduce hexene depends on its phase compn. and is detd. by the presence of metallic Fe in it. Upon oxidation, the catalyst activity decrs.; repeated reduction restores the activity to its original value. An increase in temp. from 300 to 380° raises the conversion from 6.2 to 12.0%; a further temp. rise does not affect the degree of hydrogenation. The use of H only or of a mixt. of H and CO with the partial pressure of H being equal, results in practically the same degree of conversion. An increase in partial pressure of H from 120 to 180 atm. increases the yield of hexane from 20.3 to 27.7%. A contact time of 5-6 min. results in a yield of almost 60%; decreasing the contact time to half reduces the yield to 20%; a further decrease of contact time to 47 sec. reduces the yield to 8.2%. By-products consist of small amts. of acids, alcs., and esters. B. Z. Kamich

KAMZOLKIN, V. V.

Nature of changes of iron catalysts in the synthesis of hydrocarbons. A. N. Bashkirov, V. V. Kamzolkin, and M. I. Khotimskaya. *Trudy Inst. Vyd. Akad. Nauk S.S.S.R.* 6, 147-50(1948).—Studies were conducted with 2 types of catalysts: (1) an alloy catalyst used in the synthesis of NH_3, and (2) an Fe catalyst pptd. on kieselguhr. In case of the latter, after a definite period changes in phase compn. of catalyst under the influence of oxidation-reduction agents (CO, H, CO_2, and H_2O) cease and from then on the phase compn. remains practically unchanged. This was not observed for the alloy catalyst. B. Z. K.



Catalytic activity of some natural silicate minerals in the synthesis from carbon monoxide and hydrogen. A. N. Il'inskiy, F. I. Novak, S. M. Loktev, and V. V. Kamzolkin. *Khim. i Tekhnol. Topliv* 1956, No. 3, 38-42.—The following minerals were included in the study of their catalytic activity in reaction of CO and H (1:1 mole ratio) at 300-425° at 30 atm. pressure: dumortierite ($HB_2Al_3Si_2O_{10}$), almandite ($Fe_3Al_2[SiO_4]_3$), topaz ($Al[F,OH]_2[SiO_4]$), danburite ($CaB_2[SiO_4]_2$), rhodonite ($Mn,Ca[Si_2O_6]$), beryl ($Be_3Al_2[Si_6O_{18}]$), diopside ($CaMg[Si_2O_6]$), hedenbergite ($CaFe[Si_2O_6]$), aegirite ($NaFe[Si_2O_6]$), spodumene ($(Li,Na)Al[Si_2O_6]$), actinolite ($Ca_2(Mg,Fe)_5[Si_4O_{11}](OH)_2$), gedrite (?), anthophyllite ($(Mg,Fe)_7[Si_4O_{11}](OH)_2$), kaolin ($Al_4[Si_2O_5](OH)_8$), montmorillonite ($(Mg,Ca)O\cdot Al_2O_3\cdot 5SiO_2\cdot 7H_2O$), talc ($Mg_3[Si_4O_{11}](OH)_2$), phlogopite ($KMg_3[Si_3AlO_{10}](F,OH)_2$), lepidolite ($KSi_{1.5}Al_{1.5}[AlSi_3O_{10}](F,OH)_2$), biotite ($K(Mg,Fe)_3[Si_3AlO_{10}](F,OH)_2$), serpentine ($Mg_3[Si_2O_5](OH)_4$), nontronite ($H_2Fe_2Si_3O_{10}\cdot H_2O$), chlorite ($H_8(Mg,Fe)_5Al_2Si_3O_{18}$), pyrophyllite ($Al_2[Si_4O_{10}](OH)_2$), albite ($Na[AlSi_3O_8]$), microcline ($K[AlSi_3O_8]$), scapolite oligoclase ($NaAlSi_3O_8$), pollucite ($Cs[AlSi_2O_6]$), petalite ($(Li,Na)[AlSi_4O_{10}]$), nepheline ($Na[AlSiO_4]$), natrolite ($Na_2Al_2Si_3O_{10}\cdot 2H_2O$), and kieselguhr. With some of these typical catalysts, e.g., beryl, the following hydrocarbons (% vol.) were found in the product: C_1—16.1, C_2—38.5, C_3—32.7, C_4—12.7, and some O-contg. derivs. The max. yield of liquid fraction of hydrocarbons was obtained in the instance of talc and kieselguhr catalysts. The effects of cryst. structure and traces of rare earth elements in the minerals are discussed in the light of their industrial utilization. A. P. Kuzlahy

KAMZOLKIN, V.V., kandidat khimicheskikh nauk.

Producing higher aliphatic alcohols by direct oxidation of paraffin hydrocarbons. Khim. v shkole 11 no.2:26-27 Mr-Ap '56. (MLRA 9:7)
(Alcohols) (Hydrocarbons) (Oxidation)

AUTHOR: Bashkoriv, A.N., Kamzolkin, V.V., Sokova, K.M., and Andreyeva, T.P. 65-4-2/12

TITLE: Method of determination of primary and secondary higher alcohols of the fatty series in their mixtures. (Metod opredeleniya pervichnykh i vtorichnykh vyssikh spirtov zhirnogo ryada v ikh smesyakh)

PERIODICAL: "Khimiya i Tekhnologiya Topliva i Masel"(Chemistry and Technology of Fuels and Lubricants)1957,No.4,pp.7-11 (U.S.S.R)

ABSTRACT: During studies of higher alcohols produced by a direct oxidation of paraffinic hydrocarbons it was found difficult to determine the content of primary and secondary alcohols, as methods described in the literature (2, 3, 4) were found unsatisfactory when the number of carbon atoms in the molecules exceeds eight. The method is based on some regularities in the oxidation reaction of higher n-aliphatic alcohols with chromic acid in glacial acetic acid. The accuracy of the method on average 5% (Table). There is one table and 6 references including 3 Slavic.

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ASSOCIATION: Petroleum Institute Ac.Sc.U.S.S.R. (Institut Nefti AN SSSR)

AVAILABLE:

KAMZOLKIN, V.V.

BASHKIROV, A.N., doktor tekhnicheskikh nauk, professor; KAMZOLKIN, V.V., kandidat khimicheskikh nauk; LODZIK, S.A.

Technological elements of the production of higher fatty alcohols by the direct oxidation of paraffinic hydrocarbons. Masl.-zhir.prom. 23 no.7:24-26 '57. (MLRA 10:8)

1.Institut nefti AN SSSR.
(Alcohols) (Hydrocarbons) (Oxidation)

KAMZOLKIN, V.V.

5(3); 11(4) PHASE I BOOK EXPLOITATION SOV/2221

Akademiya nauk SSSR. Institut nefti

Trudy, t. 12 (Transactions of the Petroleum Institute, USSR. Academy of Sciences, Vol 12) Moscow, Izd-vo AN SSSR, 1958. 395 p. Errata slip inserted. 1,700 copies printed.

Ed.: S. R. Sergiyenko, Professor; Ed. of Publishing House: K. G. Miyesserov; Tech. Ed.: V. V. Golubeva.

PURPOSE: The book is intended for scientists, engineers, and technicians in the petroleum industry.

COVERAGE: This collection of articles describes the results of studies on the chemistry and technology of petroleum and gas conducted in the laboratories of the Petroleum Institute, Academy of Sciences, USSR, in 1956 and 1957. A new section "Petrochemical Synthesis and Technology of Petroleum" has been included in the collection of articles. A list of investigations published by the associates of the Institute in 1956 and 1957 and a list of dissertations for the Doctor's and Candidate's degrees presented in 1956 and 1957 at open sessions of the Academic Council of the Petroleum Institute, Academy of Sciences, USSR, are given.

SOV/65-58-6-3/13

AUTHORS: Bashkirov, A. N; Kamzolkin, V. V; Sokova, K. M. and Andreyeva, T. P.

TITLE: The Position of Hydroxyl Groups in Alcohols Prepared During the Liquid Phase Oxidation of n-Paraffin Hydrocarbons. (O polozhenii gidroksil'noy gruppy v spirtakh, poluchayemykh pri zhidkofaznom okislenii n-parafinovykh uglevodorodov).

PERIODICAL: Khimiya i Tekhnologiya Topliv i Masel, 1958, Nr.6. pp. 10 - 16. (USSR)

ABSTRACT: When investigating the position of the hydroxyl groups in the alcohol molecule, the authors used the method of oxidizing alcohols with potassium dichromate in a medium diluted with sulphuric acid (Ref.4). During the oxidation of primary alcohols, carboxylic acids, with the same number of C-atoms as contained in the initial alcohol, are obtained. During the oxidation of secondary alcohols, the C-C bonds are split at the hydroxyl groups, and carboxylic acids with a lower number of C atoms in the molecule are formed. Therefore, it is possible to determine the position of the hydroxyl groups according to the composition of the acids. Some side reactions take place when the process is carried out in sulphuric acid at increased temperatures. The authors investigated the

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The Position of Hydroxyl Groups in Alcohols Prepared During the Liquid Phase Oxidation of n-Paraffin Hydrocarbons.

oxidation of individual aliphatic alcohols with varying positions of the hydroxyl group (4-tetradecanol and 7-hexadecanol) with subsequent identification of the acids. The method of F. Kraft (Ref.4) was slightly modified, and distillations were carried out according to the method described by L. K. Obukhova (Ref.5). The height of the rectification column was 40 cm and the diameter 1.4 cm. A mixture of hydrocarbons, from which the olefins and aromatic hydrocarbons had been separated, was used as carrier. The content of esters in the fractions was calculated on the basis of the ester number of the fraction. On the basis of the composition of the acids it was possible to conclude that oxidation of the alcohols occurs mainly at the hydroxyl groups. Discrepancies in the rule of Papov occur at increasing distances of the hydroxyl groups from the end hydrocarbon atom. The neutral oxygen-containing compounds (ketones), obtained during the oxidation, were subjected to second oxidation reaction. The total yield of acids = 96%. The investigated fractions of alcohols were concluded to be a mixture of isomers of secondary n-hexadecanols in which the isomers are contained in equal molar

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The Position of Hydroxyl Groups in Alcohols Prepared During the Liquid Phase Oxidation of n-Paraffin Hydrocarbons.

quantities. Experimental details on the oxidation of the individual alcohols are given. Tables 1 and 2 give the composition of oxidation products of alcohols and of their distillates; the distribution of acids is shown in Table 3. During experiments on defining the position of the hydroxyl groups in the alcohols, a fraction of alcohols boiling between 125.0 - 126.8, with an hydroxyl number of 229.5, was oxidized. The neutral oxygen-containing compounds were subjected to a second oxidation reaction. Results are given in Tables 4 and 5. These experiments showed that during the oxidation of n-paraffin hydrocarbons in the liquid phase, n-secondary alcohols are formed. The hydroxyl groups of these alcohols are situated at different C atoms of the molecule. It was also found that the reactivity of the secondary C atoms of molecules of higher n-paraffin hydrocarbons to oxygen is practically identical. There are 5 Tables and 8 References: 4 Soviet, 2 German, 1 English and 1 Dutch.

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ASSOCIATION: Petroleum Institute, AS USSR (Institut nefti AN SSSR)

KAMZOLKIN, V.V.

AUTHORS: Bashkirov, A. N., Kamzolkin, V. V., Sokova, K. M., Andreyeva, T. P., 20-1-12/58

TITLE: On the Problem of the Oxidation Mechanism of Paraffinic Hydrocarbons in the Liquid Phase (K voprosu o mekhanizme zhidkofaznogo okisleniya parafinovykh uglevodorodov)

PERIODICAL: Doklady AN SSSR, 1958, Vol. 118, Nr 1, pp. 149-152 (USSR)

ABSTRACT: This process is complicated and consists of a number of reactions taking place in parallel or successively. It is considered an established fact that this oxidation under mild conditions proceeds to water and carbonic acid through intermediate products of an incomplete oxidation (peroxides, alcohols, ketones, acids and others). A complicated mixture of oxygen-containing products develops. In an earlier paper (reference 1) the authors worked out the synthesis of higher alcohols of the aliphatic series by direct oxidation of paraffinic hydrocarbons in the presence of boric acid. The Shemism and the mechanism of individual stages has still to be determined. For this purpose the oxidation of a number of individual hydrocarbons was carried out and the composition of the alcohols produced was studied. A nitrogen-oxygen mixture (3,0 - 3,5% O_2) with addition of 5% boric acid (calculated on the initial hydrocarbon) under atmospheric pressure was

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On the Problem of the Oxidation Mechanism of Paraffinic Hydrocarbons in the Liquid Phase. 2-1-62/58

used for the oxidation. The temperature was 165-170°C and the duration was 4 hours. The hydrocarbons are characterized in table 1, the oxides ("oxydates"?) in table 2. From the latter follows that alcohols represent the main product (about 70%) of the oxidation. For determining their composition and structure they were isolated from the oxides. Their characteristics are recorded in table 3. From this is to be seen that the alcohols have hydroxyl numbers corresponding to tri-, tetra-, pent- and hexadecanole and consequently the same number of carbon atoms in the molecule as each of the corresponding initial hydrocarbons. In order to prove this alcohols were reconverted to hydrocarbons, in order to compare the properties of the latter with the initial hydrocarbons. The conparison of the two types of hydrocarbons showed their identity in the case of every individual alcohol. From this result the conclusion may be drawn that alcohols containing the same number of carbon atoms inthe molecule as the initial hydrocarbons predominantly develop in the oxidation of n-paraffinic hydrocarbons by molecular oxygen inthe liquid phase and under the conditions described. The molecule of the initial hydrocarbons is on the whole not destroyed. The determination of secondary alcohols meets with great difficulties

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On the Problem of the Oxidation Mechanism of Paraffinic Hydrocarbons in the Liquid Phase. 20-1-42/58

and does not lead to positive results. The methods known in publications (references3,4) proved to be useless. In order to solve this problem the authors worked out a special method of the quantitative determination of primary and secondary alcohols. For this purpose alcohols were by means of chromic acid oxidized in the medium of glacial acetic acid. The accuracy of this method is about 5%. From the given results of analysis follows that predominantly secondary alcohols form in the reaction studied here (87,7 - 88,7 mol.%). The interaction of oxygen with the molecules of the paraffinic hydrocarbons of normal structure mainly takes place at the secondary carbon atoms. There are 4 tables, and 5 references, 3 of which are Slavic.

ASSOCIATION: Petroleum Institute AS USSR (Institut nefti Akademii nauk SSSR)

PRESENTED: June 26, 1957, by A.V. Topchiyev, Acadmician

SUBMITTED: June 26, 1957

AVAILABLE: Library of Congress

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largest quantity of all. About 1% of the condensate was formed by acids, 90% of them acetic acid. Further the product desorbed from the activated charcoal was investigated (tables 3,4). It had been adsorbed from the outgoing gases during the synthesis. During the investigations some data on the chemism of the synthesis under review were obtained. An essential peculiarity of the process is the fact that it takes place in stages. At first carbon monoxide forms in quantitaties which do not exceed those in the water gas. Carbon monoxide represents the main source of the oxygen-containing compounds and of hydrocarbons. The concentration of carbon monoxide decreases with increasing concentration of water vapor in the reaction mixture. The synthesis comes to a standstill when the concentration of carbon monoxide sank to about 2%. The recirbulation is capable of largely suppressing the formation of carbon monoxide. Table 5 gives some data on the products obtained in this connection. An approximate material balance shows a yield per 1 m^3 gas mixture (CO_2 : H_2 = 1 : 3) in gram of: alcohols 92, hydrocarbons 81 water 345, carbon monoxide 31 and other oxygen-containing compounds 10. A lower speed of passage leads to an increase in the amount of acids. This may be in favor of the conception that the

The Synthesis of Ethanol From Carbon Dioxide and Hydrogen. 20-2-24/60

main final product, ethanol, develops from acetic acid by reduction. This new synthesis of ethyl alcohol from carbon dioxide and hydrogen represents a step forward on the way of the development of the at present not yet numerous methods of converting carbon dioxide to valuable chemical products.
There are 5 tables, 11 references, 4 of which are Slavic.

ASSOCIATION: Petroleum Institute, AS USSR (Institut nefti Akademii nauk SSSR)

PRESENTED: July 12, 1957, by A. V. Topchiyev, Academician

SUBMITTED: July 12, 1957

AVAILABLE: Library of Congress

Card 3/3

AUTHORS: Bashkirov, A. N., Kamzolkin, V. V. Sokova,K.M., 2o-119-4-21/6o
Andreyeva, T. P.

TITLE: The Composition of Alcohols Produced by Liquid Phase Oxydation of n-Paraffinic Hydrocarbons (O sostave spirtov, poluchayushchikhsya pri zhidkofaznom okislenii n-parafinovykh uglevodorodov)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol 119, Nr 4, pp. 7o5-7o7 (USSR)

ABSTRACT: Teh investigation of the chemical composition and the structure of higher aliphatic alcohols is very important for the explanation of their formation mechanism as well as for the selection of the right method for their rational exploitation. In the present paper the authors occupied themselves with the hydroxyl group in the alcohol molecule. They paid special attention to the method of oxydation of alcohols with sodium bichromate and with sulfuric acid. The weigth ratios between alcohol and sodium bichromate were 1:3, the quantity of the diluted sulfuric acid and of alcohol 1o:1. The oxidation was carried out at different temperatures. The existence of certain methyl ethers was found in single fractions. The

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computation could be carried out also according to the following formula:

$$X = \frac{A(M-1)-107.9(100-A)}{14A} \cdot 100$$

whereby X denotes the content of acid C_n(mol.%); A denotes the content of silver in the existing silver salt (percentage by weight); M denotes the molecular weight of the acid C_{n+1}; The numerical empirical data prove that this method of oxidation of alcohols can be used very well for the detection of the position of the hydroxyl group. The experimental results show furthermore that the alcohols obtained form a binary mixture of- n-hexadecyl alcohols. The quantity of various alcohol molecules in this group is equal. Comprisingly was said that the alcohls produced by the oxidation of n-paraffinic hydrocarbons are mainly of secondary nature and represent a mixture of various isomeric substances.

The reactivity of the atoms of the molecules of higher paraffin hydrogens of normal structure does not display any considerable differences and is equal in comparison to oxygen.

Card 2/3 This is the condition for the production of isomeric substances

The Composition of Alcohols Produced by Liquid Phase Oxydation of n-Paraffinic Hydrocarbons 20-119-4-21/60

of secondary alcohols during the oxidation process of hydrocarbons in liquid state.
There are 1 table and 5 references, 4 of which are Soviet.

ASSOCIATION: Institut nefti Akademii nauk SSSR (Petroleum Institute of the AS USSR)

PRESENTED: December 14, 1957 by A. V. Topchiyev, Member, Academy of Sciences, USSR

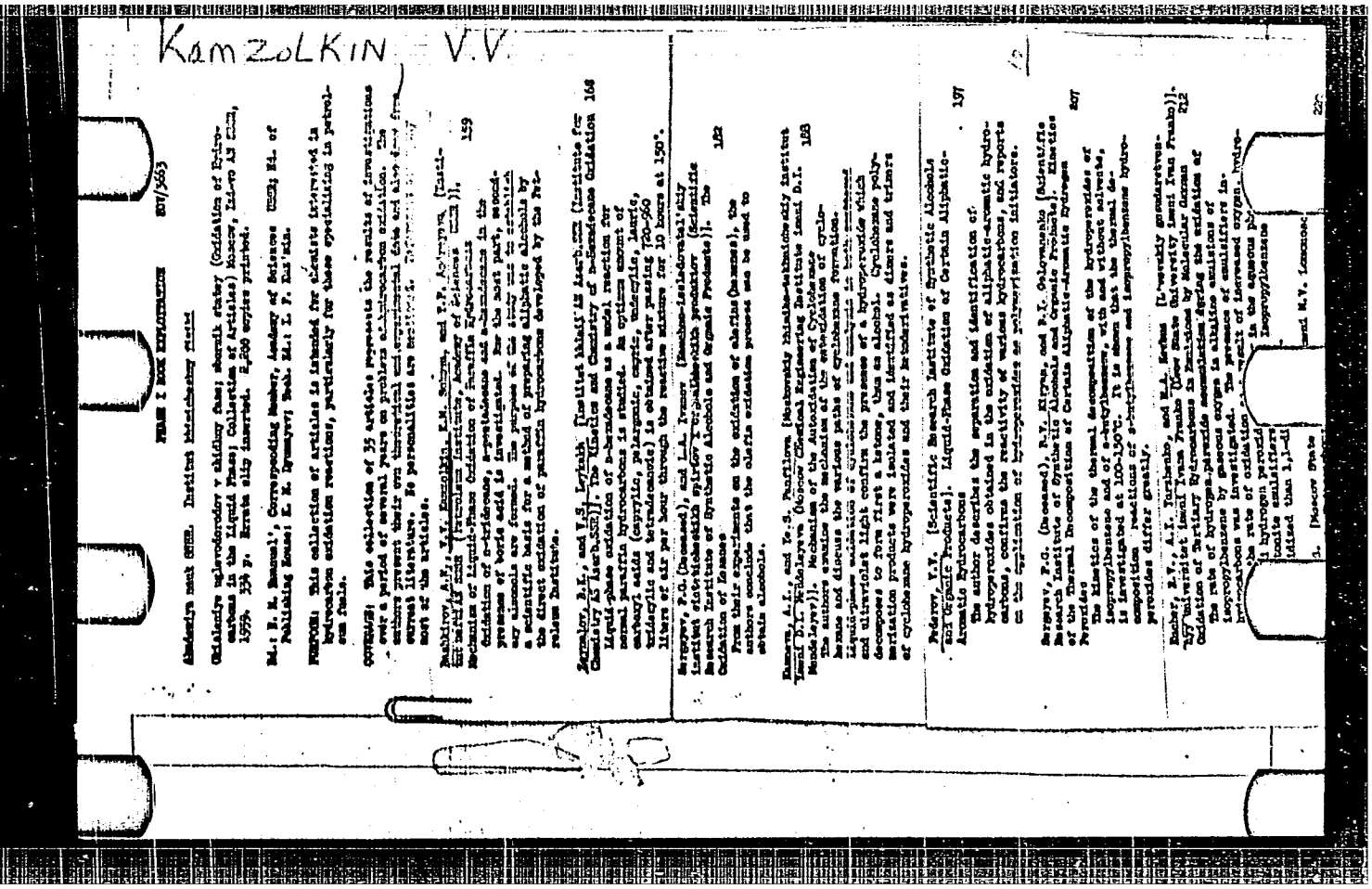
SUBMITTED: December 14, 1957

Card 3/3

KAPZOLKIN, V. V. , BAGIROV, A. N.

"Synthesis of Higher Aliphatic Alcohols by the Method of Direct Oxidation of Paraffinic Hydrocarbons."

Report submitted at the Fifth World Petroleum Congress, 30 May - 5 June 1959. New York.



Kamzolkin, V.V.

5 (3)

AUTHORS: Kamzolkin, V. V., Bashkirov, A. N., Corresponding Member AS USSR, Potarin, M. M. SOV/20-126-6-38/67

TITLE: On the Synthesis of Higher Ketones by Means of the Oxidation of Paraffin Hydrocarbons (O sinteze vysshikh ketonov metodom okisleniya parafinovykh uglevodorodov)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 6, pp 1282 - 1285 (USSR)

ABSTRACT: The formation of the carbonyl compounds takes place in the oxidation of the paraffin hydrocarbons at 120-160° much more rapidly in the initial stage than the formation of the alcohols and acids. On the basis of the concepts on the order of the formation of oxygen containing compounds (see scheme, Refs 1,2) it may be maintained that in this case ketones are formed mainly directly from hydroperoxide. Because of this observation experiments were carried out to determine whether a directed synthesis of higher ketones by means of the oxidation of paraffin hydrocarbons is possible in the liquid phase. For this purpose the authors studied the action of the reaction conditions as well as of some additions on the rate of oxidation and on the

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composition of some forming products. The fraction of synthetic hydrogenated paraffin hydrocarbons which boils out between 105 and 130° (1 torr) and which consists of carbons with 16 to 18 carbon atoms, was oxidized. The apparatus used and the method applied are described in reference 3. The temperature effects are shown by table 1. Their increase to 165° considerably intensifies the conversion of the initial hydrocarbons. A further increase to 185° remains practically without effect. The maximum yield of ketones was obtained at 120-140°. Also in the oxidation by a nitrogen oxygen mixture (3.5% O_2) the above regularities existed. By increasing this content to 21% O_2 the ketone portion in the reaction products decreased (Table 2). At the same time, however, the degree of conversion of the initial hydrocarbons increased. It is possible that other oxidation conditions may be found under which high ketone yields are obtained. Such e.g. the reduction of the specific consumption of the oxidizing gas (oxygen) from 1000 l/kg .h to 200 l/kg .h leads to ketone yields of about 55% computed with respect to the reacted paraffin (Table 2). Table 3 shows the effect exercised by

the duration of oxidation on the composition of the oxide (3.5% O_2+N_2 at 140°). The oxidation intensity increases and the ketone yield decreases with the longer duration. The optimum duration is 3-4 hours in the oxidation with air at 140°. It may be seen from figure 1 that at 120° the oxidation is inhibited after a certain maximum degree of conversion (which depends on the reaction conditions) is attained. Later, the ketone and acid portion increases somewhat at the expense of the alcohol portions (Fig 1 and experiments Nr 1,2,4,5 in table 2). In this case an alcohol oxidation may take place. The oxidation process of the hydrocarbons concerned takes place according to the chain mechanism of the free radicals where a bimolecular decomposition of hydroperoxide leads to a branching of the chain, see scheme (Ref 4). The self-acceleration of the reaction at relatively low temperatures is due to the peroxide decomposition. The oxidation rate depends on the formation rate and the concentration of the free radicals in the reaction zone. The decomposition may take place also due to an interaction with the radical of reaction III according to reference 1. The mentioned inhibition is

probably due to a rapid reduction or stoppage of the formation of free radicals which are responsible of the reaction course. At higher temperatures no inhibition occurs and the oxidation takes place to a considerable degree of conversion (Fig 2). Alcohols, esters, acids and other oxygen containing compounds accumulate, however, in high quantities. Additions of $KMnO_4$, $FeSO_4$ etc. could not bring about an increase of the ketone yield. The results obtained indicate that the formation of free radicals takes place mainly according to reaction (III) and not according to (I) and (II). Thus, it was proved that the higher aliphatic ketones may be produced by direct oxidation of paraffin hydrocarbons with yields of approximately 65 mol% of the transformed hydrocarbon and at a degree of conversion of 10-15 mol%. There are 2 figures, 3 tables, and 5 references, 3 of which are Soviet.

"ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petrochemical Synthesis of the Academy of Sciences, USSR)

5(2)

AUTHORS: Bashkirov, A. N., Corresponding Member, SOV/20-127-1-24/65
AS USSR, Potarin, M. M., Kamzolkin, V. V.

TITLE: The Synthesis of Higher Ketones by Liquid Phase Oxidation of Secondary Alcohols (Sintez vysshikh ketonov metodom zhidkofaznogo okisleniya vtorichnykh spirtov)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 1, pp 93-96 (USSR)

ABSTRACT: The oxidation of the paraffin hydrocarbons in the liquid phase is considered to be a process of various stages. The succession of these stages is shown by a scheme (Refs 1-3). A considerable number of carbonyl compounds are formed, as a rule, in the production of synthetic sebacic acids by the oxidation of solid paraffins. The oxidation products of the higher paraffin hydrocarbons contain besides secondary alcohols (in the presence of boric acid) always a certain quantity of ketones (Ref 5). The carbonyl compounds (see Scheme) may be produced : a) by the decomposition of hydroperoxide (Ref 6); b) by the oxidation of the alcohols in the reaction zone. The authors attempted to clarify the possibility of oxidizing the alcohols to ketones under conditions similar to those of the oxidation of

hydrocarbons in the liquid phase, furthermore, the possibility of an orientated oxidation of secondary alcohols to ketones. For this purpose higher aliphatic alcohols (fraction boiling out within the range of from 125-170°, produced according to the method of reference 5) were used with a content of secondary alcohols of approximately 90 mole% (Ref 7). The apparatus and the method were already earlier described (Ref 5). The quantity of acids in the reaction products increases with rising temperature in the oxidation by means of an oxygen-nitrogen mixture (6.0-6.5 wt% O_2) during 4 hours at 120-180°, in contrast to that of ketones which is reduced from 63.6 to 55.3 mole% (Table 1). Carbonyl compounds apparently cannot be accumulated in greater quantities at higher temperatures since they are rapidly oxidized to acids. These acids occur either free or as esters. The transformation degree of the initial alcohols is increased by the increase of O_2-concentration in the reaction zone, the relative yield of ketones, however, is reduced (Table 2). The reaction rate depends as a rule to a considerable extent on the O_2-concentration in the oxidizing

gas. Its increase leads to greater yields of acids. The prolongation of the oxidation (Table 3, Fig 1) increases the transformation degree of the alcohols and the acid yield at the expense of the ketone yield. On the strength of the experimental results an oxidation method for alcohols could be chosen which guaranteed a ketone yield of 60 mole% in the case of a tranformation degree of 40-45 mole% of alcohols; i.e.: temperature 165°, O_2-content in the gas mixture 60-65 %, the specific consumption of the latter 1,000 l/kg^h, oxidation duration 3 hours. A higher yield of ketones may be obtained in the case of a lower transformation degree of the alcohols. Additions of Co-, Ni-, Mn-, Fe-, Cr-, Cu-, and Sn-salts are ineffective. Iron pentacarbonyl has a considerably inhibiting effect on the reaction. This proves its radical character. The data obtained are well in line with reference 8 with respect to the effect of boric acid and boric anhydride on the process mentioned in the title. There are 1 figure, 3 tables, and 8 Soviet references.

The Synthesis of Higher Ketones by Liquid Phase Oxidation of Secondary Alcohols

SOV/20-127-1-24/65

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petrochemical Synthesis of the Academy of Sciences, USSR)

SUBMITTED: March 16, 1959

Card 4/4

66172

~~5(3)~~ 5.3400 SOV/20-128-5-26/67

AUTHORS: Kamzolkin, V. V., Bashkirov, A. N., Corresponding Member, AS USSR, Sokova, K. M., Andreyeva, T. P.

TITLE: On the Composition of Ketones Formed in Oxidation in the Liquid Phase From n-Paraffin Hydrocarbons

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 5, pp 956 - 959 (USSR)

ABSTRACT: Secondary alcohols with a normal structure are the main products in the oxidation of n-paraffin hydrocarbons by molecular oxygen in the liquid phase under mild conditions in the presence of boric acid (Refs 1-3). The molecules of these alcohols have the same number of carbon atoms as the initial hydrocarbon. These alcohols form a mixture of all isomers possible with regard to the position of the hydroxyl group. Compounds with a carbonyl group, acids, and polyfunctional compounds are formed as side products. The authors paid special attention to the carbonyl compounds and used n-hexadecane as initial product. Its oxidation took place in a device described in reference 2. The oxidized substances enumerated in table 1 were formed by the effect of a nitrogen-oxygen mixture

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On the Composition of Ketones Formed in Oxidation in the Liquid Phase From n-Paraffin Hydrocarbons

(with 3.5% O_2) at 165-170° and 5% boric acid within 4 hrs. Among them were ~ 19 mol% compounds with a carbonyl group. The carbonyl compounds were separated from the oxidized substance for the purpose of determining their composition. About 40% of their total amount remained with the products which had reacted with boric acid. For this reason the authors assume that the afore-mentioned compounds containing carbonyl consist of ketones and polyfunctional compounds with a carbonyl group (mainly ketoalcohols). The distillate was chromatographically separated into paraffin hydrocarbons and compounds containing oxygen in order to determine the composition of the ketones. Table 2 shows the melting temperatures of semicarbazones. Comparison with them did not yield a final conclusion regarding the composition of the ketones investigated. Thus, they were oxidized with potassium bichromate in diluted H_2SO_4 (Ref 3).

Table 3 shows the results of the rectification of the methyl esters of the acids formed in the oxidized substance. Table 4 shows the weight- and per cent ratios of these acids. On account of the above results, the authors ascertain that mainly

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On the Composition of Ketones Formed in Oxidation in the Liquid Phase From n-Paraffin Hydrocarbons SOV/20-128-5-26/67

ketones are represented among carbonyl compounds in the reaction mentioned. These ketones have the same chain length as the initial hydrocarbon. They form a mixture of all isomers theoretically possible with regard to the position of the carbonyl group. Polyfunctional compounds containing a carbonyl group are formed in addition to the ketones. There are 4 tables, and 4 references, 3 of which are Soviet.

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petroleum-chemical Synthesis of the Academy of Sciences, USSR)

SUBMITTED: June 26, 1959

Card 3/3

BASHKIROV, A.N.; KAMZOLKIN, V.V.; SOKOVA, K.M.; ANDREYEVA, T.P.

Determination of primary and secondary higher alcohols of the aliphatic series in their mixtures. Metod.anal.org. soed.nefti,ikh smes. i proizv. no.1:170-177 '60. (MIRA 14:8)
(Alcohols) (Hydrocarbons)

KAMZOLKIN, V.V.; BASHKIROV, A.N.; SOKOVA, K.M.; ANDREYEVA, T.P.

Composition of oxygen-containing compounds formed in the liquid phase oxidation of n-pentadecane by air. Trudy Inst. nefti 14:65-75 '60. (MIRA 14:5)

(Pentadecane)
(Oxidation)

KAMZOLKIN, V.V.; BASHKIROV, A.N.; SOKOVA, K.M.; MARTYNES, M.; ANDREYEVA, T.P.

Transformations of higher aliphatic alcohols during their liquid phas oxidation. Neftekhimiia 1 no.5:675-682 S-O '61. (MIRA 15:2)

1. Institut neftekhimicheskogo sinteza AN SSSR.
(Alcohols)(Oxidation)

5.3400

69993

AUTHORS: Bashkirov, A. N., Corresponding Member of the AS USSR, Kamzolkin, V. V., Potarin, M. M., Koloverthov, G. I.

S/020/60/131/05/022/069
B011/B117

TITLE: Preparation of Higher Aliphatic Ketones by the Method of Dehydrogenation of Secondary Alcohols

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 5, pp 1067-1068 (USSR)

TEXT: The topic mentioned in the title has been studied using an industrial-type skeleton nickel catalyst. It was proved by the authors that it is possible to obtain a high yield (85% by weight), if the above-mentioned liquid-phase preparation method is used. The amount of the catalyst was 10% of the alcohol. Commercially produced C_{16} - C_{19} alcohols containing 6% of hydrocarbons were dehydrogenated. The reaction temperature was 185°, the residual pressure 33 torr. From the kinetic curves of the reaction it follows that the reaction proceeds rapidly in the liquid phase, and is practically completed within two hours. The conversion degree of the alcohols reaches 95 mole % (Fig 1). At first, a vigorous separation of hydrogen takes place, the iodine number of the product decreases, probably as a result of the hydrogenation of the unsaturated compounds in the alcohols used. Then, the iodine number is somewhat increased which is due to a side reaction involving the dehydration of the alcohols. It could be established

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Preparation of Higher Aliphatic Ketones by the Method of Dehydrogenation of Secondary Alcohols

S/020/60/131/05/022/069
B011/B117

by chromatography on silica gel that the carbohydrate content was thereby increased from 6 to 10% by weight. The acid and ester content in the reaction products remains the same as the one in the alcohols used. The curves in figure 2 show that the dehydrogenation of the alcohols is accelerated by higher temperatures. Low pressure (33 torr) favors the reaction. The small quantity of unreacted alcohols was removed from the dehydrogenation product by esterification with boric acid. Substances not reacting with boric acid were distilled from the boric esters in vacuo (7 torr). The boiling-point range of the distillate was 115 to 120°. After removal of the hydrocarbons by means of chromatography on silica gel, a fraction of higher aliphatic ketones with d_4^{20} 0.8362, n_D^{20} 1.4446 and a carbonyl number of 202.0 was obtained. There are 2 figures and 5 references, 4 of which are Soviet.

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petroleum-chemical Synthesis of the Academy of Sciences of the USSR)

SUBMITTED: November 30, 1959

Card 2/2

Z/011/62/019/001/012/017
E073/E136

AUTHORS: Kamzolkin, V.V., and Bashkirov, A.N.

TITLE: Preparation of higher glycols by oxidation of paraffinic hydrocarbons in the liquid phase

PERIODICAL: Chemie a chemická technologie. Přehled technické a hospodářské literatury, v.19, no.1, 1962, 34, abstract Ch 62-473. (Neftekhimiya, v.1, no.3, 1961, 411-417)

TEXT: The experimental results indicate that during oxidation of paraffin hydrocarbons in the liquid phase in the presence of boric acid, secondary oxidation occurs of monofunctional oxygen compounds to multifunctional. During oxidation of esters by means of acetic acid the proportion of hydroxyl, carbonyl and multifunctional ester groups increases, which leads to the same conclusion. In the presence of acetic anhydride, the described method permits the preparation of glycol esters in addition to keto-alcohols.
1 figure, 4 tables, 7 references.
[Abstractor's note: Complete translation.]
Card 1/1

38689

S/510/60/014/000/003/006
D244/D307

5.3300

AUTHORS: Kamzolkin, V.V., Bashkirov, A.N., Sokova, K.M., and Andreyeva, T.P.

TITLE: Composition of oxygen-containing compounds forming during the liquid phase aerial oxidation of n-pentadecane

SOURCE: Akademiya nauk SSSR. Institut nefti. Trudy, v. 14, 1960, Khimiya nefti, 65 - 75

TEXT: Results are presented of the study of the composition of the products of oxidation of n-pentadecane in the presence of boric acid. More oxygen was used in this work than previously (Bashkirov A.N., Khimicheskaya nauka i promyshlennost', 1, no. 3, 272 (1956)). The aim of the present investigation was to obtain additional data on the oxidative conversions of hydrocarbons and on some intermediate oxygen-containing compounds. It was found that the increase of O in the oxidizing gas from 3.5 % to 21 % doubles the quantity of O - containing compounds. At the same time the proportion of OH - containing compounds decreases from 70 % to 50 % and COOH - containing compounds increase from 12 % to 31 %. The amount of carbonyl com-

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pounds remains the same. Normal secondary alcohols are formed mainly with the OH group attached to different C atoms. The presence of poly-hydroxide compounds was established as well as the presence of a small quantity of primary alcohols containing less C atoms than the original hydrocarbon. Carbonyl compounds were found to be mainly ketones with 15 C atoms present in all possible isomeric forms. Acids not soluble in H_2O contained different molecules of different molecular size, with the highest percentage of acids lying in the C_8 - C_{10} range. Compounds with different functional groups in the same molecule were also found. The results obtained confirm that the oxidative conversion of hydrocarbons is a single stage process. There are 9 tables.

Card 2/2

KAMZOLKIN, V.V.; BASHKIROV, A.N.; KHOTIMSKAYA, M.I.; GROZHAN, M.M.; YEZHENKINA, G.M.

Synthesis of aliphatic $C_6 - C_{10}$ alcohols by the liquid phase oxidation of paraffins under pressure. Neftekhimiia 1 no.2: 244-254 Mr-Ap '61. (MIRA 15:2)

1. Institut neftekhimicheskogo sinteza AN SSSR.
(Alcohols) (Oxidation) (Paraffins)

KAMZOLKIN, V.V.; BASHKIROV, A.N.; LODZIK, S.A.

Composition of alcohols obtained by the direct oxidation of paraffins under industrial conditions. Neftekhimiia 1 no.2: 260-266 Mr-Ap '61. (MIRA 15:2)

(Alcohols)
(Paraffins)

KAMZOLKIN, V.V.; BASHKIROV, A.N.; LODZIK, S.A.

Possibilities for obtaining higher glycols by liquid-phase oxidation of paraffin hydrocarbons. Neftekhimia 1 no.3: 411-417 My-Je '61. (MIRA 16:11)

1. Institut neftekhimicheskogo sinteza AN SSSR.

BASHKIROV, A.N.; KAMZOLKIN, V.V.; SOKOVA, K.M.; ANDREYEVA, T.P.; KORNEVA, V.V.; ZAKHARKIN, L.I.

Synthesis of cyclododecanol by the liquid-phase oxidation of cyclododecane. Neftekhimiia 1 no.4:527-534 Jl-Ag '61. (MIRA 16:11)

1. Institut neftekhimicheskogo sinteza AN SSSR i Institut elementoorganicheskikh soyedineniy AN SSSR.

ZAKHARKIN, L.I.; KORNEVA, V.V.; KAMZOLKIN, V.V.; SOKOVA, K.M.; ANDREYEVA, T.P.; BASHKIROV, A.N.

Preparation of ω-dodecalactam from 1,5,9-cyclododecatriene. Neftekhimiia 2 no.1:106-109 Ja-F '62. (MIRA 15:5)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Lactams) (Cyclododecatriene)

ZAKHARKIN, L.I., KORNEVA, V.V., KUKITSYNSKAYA, G.M., BASHKIROVA, A.N., KAMZOLKIN, V.V., SOKOLOVA, K.M.

New monomer for the production of th syntheric fiber dcda-Kalaktan.

Report to be submitted for the 12th Conference on high molecular weight compounds devoted to monomers, Baku, 3-7 April 62

KOLESNIKOVA, L.P.; KAMZOLKIN, V.V.; KHOTIMSKAYA, M.I.; Prinimala uchastiye: STAROBINETS, L.L.

Use of gas chromatography in the study of isomeric composition of alcohols. Neftekhimiia 2 no.3:355-358 My-Je '62.
(MIRA 15:8)

1. Institut neftekhimicheskogo sinteza AN SSSR.
(Alcohols) (Gas chromatography)

KAMZOLKIN, V.V.; BASHKIROV, A.N.; KAMZOLKINA, Ye.V.; LODZIK, S.A.

Certain laws governing the liquid-phase oxidation of olefins.
Neftekhimiia 2 no.5:750-755 S-O '62. (MIRA 16:1)

1. Institut neftekhimicheskogo sinteza AN SSSR.
(Olefins) (Oxidation)

KAMZOLKIN, V.V.

2

SOKOLOVA, S.M., KAMZOLKIN, V.V., ANDREYEVA, T.P.

Obtaining cyclododecanol by liquid-phase oxidation of cyclododecane

Report to be submitted for the Sixth World Petroleum Congress, Frankfurt, 16-26 June 63

KRYUKOV, Yu.B.; SMIRNOVA, R.M.; SELEZNEV, V.A.; KAMZOLKIN, V.V.; BASHKIROV, A.N.

Intermediate stages in the liquid phase oxidation of secondary alcohols to ketones. Neftekhimiia 3 no.2:238-245 Mr-Ap '63. (MIRA 16:5)

1. Institut neftekhimicheskogo sinteza AN SSSR imeni A.V.Topchiyeva.
(Alcohols) (Oxidation) (Ketones)

KAMZOLKIN, V.V.; BASHKIROV, A.N.; SOKOVA, K.M.; ANDREYEVA, T.P.

By-products of the liquid-phase oxidation of cyclododecane with molecular oxygen in the presence of boric acid. Neftekhimiia 4 no.1:96-99 Ja-F'64 (MIRA 17:6)

1. Institut neftekhimicheskogo sinteza AN SSSR imeni A.V. Topchiyeva.

BASHKIROV, A.N.; KAMZOLKIN, V.V.; [illegible]TARIN, K.N.

Obtaining higher ketones by the dehydrogenation of secondary alcohols over copper-chromium and nickel-chromium catalysts. Neftekhimiia 4 no.2:298-300 Mr-Ap '64 (MIRA 17:8)

1. Institut neftekhimicheskogo sinteza AN SSSR imeni A.V. Topchiyeva.

PONOMARENKO, A.T.; KAGAN, Yu.B.; KAMZOLKIN, V.V.

Device for measuring gas consumption under high pressure. Khim. i tekh.topl. i masel 9 no.2:48-50 F '64. (MIRA 17:4)

1. Institut neftekhimicheskogo sinteza AN SSSR.

NOVAK, F.I.; KAMZOLKIN, V.V.; BASHKIROV, A.N.

Catalytic activity of the natural silicates of minerals in the synthesis of hydrocarbons from carbon monoxide and hydrogen. Neftekhimia 4 no.3:447-451 My-Je '64. (MIRA 18:2)

1. Institut neftekhimicheskogo sinteza AN SSSR im. A.V.Topchiyeva.

KAMZOLKIN, V.V.; KRYUKOV, Yu.B.; KAGAN, Yu.B.

Prospective trend of the petroleum chemistry. Vest. AN SSSR 34 no.11:60-65 N '64. (MIRA 17:12)

1. Institut neftekhimicheskogo sinteza im. A.V. Topchiyeva AN SSSR.

KAMZOLKINA, N. B.: Master Med Sci (diss) -- "The antigen structure of the New-castle dysentery microbe and its serological and immunological interrelationship with microbes of the Flexner sub-type". Moscow, 1958. 15 pp (First Moscow Order of Lenin Med Inst im I. M. Sechenov), 200 copies (KL, No 7, 1959, 129)

KAMZOLKINA, N.B.; LUKASHOVA, N.I.; ZAKHAROVA, N.S.; BORISOVA, L.V.

Use of cellular cultures for the determination of antitoxin content in antidiphtheria sera. Zhur. mikrobiol., epid. i immun. 42 no.11:122-123 N '65. (MIRA 18:12)

1. Submitted April 14, 1965.

EPSHTEYN-LITVAK, R.V.; DMITRIYEVA-RAVIKOVICH, Ye.M.; D'YAKOVA, Ye.I.; KAMENSKAYA, I.N.; VIL'SHANSKAYA, F.L.; KAMZOLKINA, N.B.

Theoretical bases of dysenterial immunity. Zhur. mikrobiol. epid. i immun. 32 no.6:18-25 Je '61. (MIRA 15:5)

1. Iz Moskovskogo instituta epidemiologii, mikrobiologii i gigiyeny.
(DYSENTERY) (IMMUNITY)

KAMZOLKINA, Ye. V.

USSR/Chemistry - Synthetic Liquid Fuels Jul/Aug 52

"The Role of Oxygen-Containing Compounds in the Synthesis of Hydrocarbons From Carbon Monoxide and Hydrogen," Yu. B. Kagan, Yu. B. Kryukov, Ye. V. Kamzolkina, A. N. Bashkirov, Petroleum Inst. Acad Sci USSR "Iz Ak Nauk SSSR, Otdel Khim Nauk" No 4, pp 649-657, 1952

Article states that results of the expts described show that alcs cannot be regarded as intermediate products in the synthesis of hydrocarbons, and that iron catalysts, under the conditions of hydrocarbon synthesis, accelerate the oxidation of alcs and aldehydes. Advances hypotheses explaining the formation of oxygen-contg compds (by-products of hydrocarbons).

PA 229T16

KAMZOLKINA, Ye. V.

5(3); 11(4) PHASE I BOOK EXPLOITATION SOV/2221

Akademiya nauk SSSR. Institut nefti

Trudy, t. 12 (Transactions of the Petroleum Institute, USSR. Academy of Sciences, Vol 12) Moscow, Izd-vo AN SSSR, 1958. 395 p. Errata slip inserted. 1,700 copies printed.

Ed.: S. R. Sergiyenko, Professor; Ed. of Publishing House: K. G. Miyasserov; Tech. Ed.: V. V. Golubeva.

PURPOSE: The book is intended for scientists, engineers, and technicians in the petroleum industry.

COVERAGE: This collection of articles describes the results of studies on the chemistry and technology of petroleum and gas conducted in the laboratories of the Petroleum Institute, Academy of Sciences, USSR, in 1956 and 1957. A new section "Petrochemical Synthesis and Technology of Petroleum" has been included in the collection of articles. A list of investigations published by the associates of the Institute in 1956 and 1957 and a list of dissertations for the Doctor's and Candidate's degrees presented in 1956 and 1957 at open sessions of the Academic Council of the Petroleum Institute, Academy of Sciences, USSR, are given.

KAMZOLKINA, Ye. V., Candidate Chem Sci (diss) -- "A study of the decomposition reactions of carbon monoxide on melted iron catalysts for synthesis from carbon monoxide and hydrogen". Moscow, 1959. 13 pp (Acad Sci USSR, Inst of Petroleum-Chem Synthesis), 120 copies (KL, No 23, 1959, 161)

5(2) SOV/156-59-1-42/54

AUTHORS: Bashkirov, A. N., Kamzolkina, Ye. V., Kagan, Yu. B.

TITLE: On Catalysts of the Reactions of the Decomposition of Carbon Monoxide (O katalizatorakh reaktsiy razlozheniya okisi ugleroda)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya tekhnologiya, 1959, Nr 1, pp 162 - 165 (USSR)

ABSTRACT: For the systematic investigation of the influence of catalysts on the reactions: 1) $2\,Fe+2\,CO \rightarrow Fe_2C + CO_2$, and 2) $2CO \rightarrow C + CO_2$, melted iron catalysts with activating additives (Al_2O_3, SiO_2, K_2O, Cr_2O_3, B_2O_3, MoO_3, V_2O_5 MgO, MnO, and combinations thereof), as employed in the synthesis Co+H, were investigated. The results are listed in a table. Carbide formation (reaction 1) and reaction 2 were accelerated by Al_2O_3 and V_2O_3. K_2O accelerates only reaction 1. MoO_3 is ineffective, Cr_2O_3, FeCr, and in particular SiO_2 and B_2O_3 exercise inhibitory effects. With several additives to the catalyst, the properties have, as a rule, a cumulative effect.

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On Catalysts of the Reactions of the Decomposition of Carbon Monoxide

SOV/156-59-1-42/54

Only FeCr, which, when added exclusively, inhibits the reaction, increases the reaction velocity in the presence of other additives. Thus an iron catalyst with kaolin (as an SiO_2 vehicle), K_2O and FeCr showed the highest reactivity. In this case, even B_2O_3 inhibits only reaction 2. A further test series concerned industrial iron catalysts, which were also given additives. The table of the results shows that also in this case the same rules apply. There are 2 tables and 1 Soviet reference.

ASSOCIATION: Kafedra neftekhimicheskogo sinteza i iskusstvennogo zhidkogo topliva Moskovskogo instituta tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Chair of Petroleum-chemical Synthesis and Artificial Liquid Fuels of the Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov)

SUBMITTED: October 6, 1958

Card 2/2

S/195/60/001/003/008/013
B013/B058

AUTHORS: Kagan, Yu. B. Bashkirov, A. N., Kamzolkina, Ye. V., Loktev, S. M.

TITLE: On the Activation Process of Molten Iron Catalysts for for CO and H_2 Synthesis Under the Effect of the Reaction Mixture

PERIODICAL: Kinetika i kataliz, 1960, Vol. 1, No. 3, pp. 393 - 400

TEXT: The activation of molten iron catalysts for the hydrocarbon synthesis from CO and H_2 under the effect of the reaction mixture was studied in this paper. The following catalysts were used:

1) $100Fe_3O_4 + 6Al_2O_3 + 4{\cdot}2SiO_2 + 1{\cdot}2K_2O + 0{\cdot}3Cr$;
2) $100Fe_3O_4 + 6Al_2O_3 + 4{\cdot}2SiO_2 + 1{\cdot}2K_2O + 0{\cdot}5V$;
3) $100Fe_3O_4 + 6Al_2O_3 + 4{\cdot}2SiO_2 + 1{\cdot}2K_2O + 1{\cdot}0B_2O_3$. They were reduced

On the Activation Process of Molten Iron Catalysts for CO and H_2 Synthesis Under the Effect of the Reaction Mixture

S/195/60/001/003/008/013
B013/B058

within 1.5 hrs in hydrogen current at 1000°C. The study was made in a highpressure apparatus (Ref. 4) in the laboratory. For each of the catalysts studied, the lowest temperatures and pressures were initially chosen, at which, over the freshly and reduced catalysts (in comparable time intervals), a high degree of transformation of the carbon monoxide (84 to 86%) entering at a volume rate of the initial gas (CO and H_2 1 : 1) of ~1500 h^{-1} was obtained. The catalysts were gradually activated under these conditions. The duration of the tests varied. The tests of catalysts of equal composition were conducted under the same conditions and in the same reaction vessel. The indices of the synthesis were well reproducible. The results determined could therefore also be compared with each other. The samples were hydrogenated after termination of the synthesis test. Subsequently, the hydrogenated samples were treated with CO at atmospheric pressure, a volume rate of 800 h^{-1} and temperatures by 10° higher than at the end of the synthesis test, with carbide being formed. The studies

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produced the following results: the previously (Refs. 1, 2) made statement that the iron catalysts molten at high temperatures (1000°C) immediately after reduction, are inactive in the synthesis of CO and H_2 and obtain activity only during the course of this synthesis, was confirmed. Activation also continues after reaching activity, which warrants a practically complete transformation of the initial carbon monoxide. This process is not terminated until 3 to 4 days after conduction of the synthesis. Simultaneously with the activation of the catalysts under the effect of the reaction mixture, their reactivity with respect to carbide formation is also increased. Those catalysts which have reached equal activity in consequence of the CO + H_2 synthesis, have also a similar reactivity with regard to carbide formation. The activation of the catalysts during the synthesis is accompanied by an increase of their activity during CO decomposition under formation of elementary carbon. The conditions under which the activation of catalysts occur (pressure, temperature, CO_2 content of the gas) have a noticeable effect on their properties. Of the methods investigated of

On the Activation Process of Molten Iron Catalysts for CO and H_2 Synthesis Under the Effect of the Reaction Mixture

S/195/60/001/003/008/013
B013/B058

the activation of the catalyst for the synthesis, its treatment at the synthesis temperature is suited best. In this case the catalysts get specially active, but simultaneously show a lower activity with regard to CO decomposition. There are 3 figures, 4 tables, and 6 Soviet references.

ASSOCIATION: Institut neftekhimicheskogo sinteza AN SSSR
(Institute of Petrochemical Synthesis AS USSR)

SUBMITTED: January 19, 1960

Card 4/4

KAMZOLKIN, V.V.; BASHKIROV, A.N.; KAMZOLKINA, Ye.V.; LODZIK, S.A.

Certain laws governing the liquid-phase oxidation of olefins.
Neftekhimiia 2 no.5:750-755 S-O '62. (MIRA 16:1)

1. Institut neftekhimicheskogo sinteza AN SSSR.
(Olefins) (Oxidation)

BRODSKIY, Matvey Abramovich; KAMZOLOV, Aleksey Pavlovich; KASPEROVICH, N.S., inzh., red.; UVAROVA, A.F., tekhn. red.

[Catalog of spare parts for agricultural tractors] Katalog zapasnykh chastei sel'skokhoziaistvennykh traktorov. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1961. (MIRA 14:8)
(Tractors--Catalogs)

KAMZOLOV, N. F.

Self - determination, National

National and colonial problem in the decisions of the Prague Conference. Vest. Mosk. un. 7 no. 4, 1952.

9. Monthly List of Russian Accessions, Library of Congress, August, 1952 1953. Unclassified.

LEONOV, O.B.; kand.tekhn.nauk, dotsent; KAMZOLOV, Ye.P., aspirant

Investigating film carburation. Izv.vys.ucheb.zav.; mashinostr. no.1:116-122 '61. (MIRA 14:4)

1. Moskovskoye vysshaye tekhnicheskoye uchilishche imeni Baumana.
(Diesel engines---Testing)

KAMZOLOV, Ye.P., aspirant

Investigating the process of ignition and combustion of fuel evaporating from a heated surface. Izv.vys.ucheb.zav.; mashinostr. no.4:124-132 '61. (MIRA 14:6)

1. Moskovskoye vysshaye tekhnicheskoye uchilishche imeni Baumana.
(Combustion)

32240
S/145/61/000/004/004/008
D221/D301

11.7100

AUTHOR: Kamzolov, Ye.P., Aspirant

TITLE: Investigating the process of fuel ignition and combustion process during its evaporation from a heated surface

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Mashinostroyeniye, no. 4, 1961, 124 - 132

TEXT: The investigation was carried out on a M4 (MCh) 10.5/13 engine with a cylindrical turbulent combustion chamber. One of the covers of the detachable chamber held a piezo-quartz transducer for measuring pressure, whereas the other cover contained a heat resisting optical glass ЛК-5 (LK-5). This permitted high speed photography of the process. The required temperature was established by electric heaters, controlled by two thermocouples. The fuel system incorporated two nozzles - a working and a supplementary unit. The cyclic operation was ensured by automatic blocking of the auxiliary nozzle. The incidence angle of the flame was varied by ex-

Card 1/5

Investigating the process of ...

change of atomizers. The angles between the axes of nozzle apertures and the atomizer α, and the angle of the axis of the flame and the tangent to the surface of the combustion chamber β, (called the injection angle), as well as the free length of flame before colliding with the wall l_f are illustrated in Fig. 2. The instruments used allowed simultaneous measurement (and photography) of processes, recording of pressure in the combustion chamber p_z, injection pressure p_i, lift of the needle in the working nozzle, and the marking of the upper dead center as well as the time. The experiments were carried out with a diesel fuel ДЛ(DL) and automobile gasolene A-70 (A-70). The plot of the temperature effect reveals a slight increase of p_z and of the rate of pressure increment, $\frac{\Delta p}{\Delta \varphi}$ with higher heating temperature, t_h. This may be due to faster spread of the flame. In addition, reduced lagging of the ignition is partly compensated by faster evaporation. This ensures a smooth engine operation within a wide range of surface temperatu-

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Investigating the process of ...

res t_h. A low t_h is uneconomical. The two-center ignition with an atomizer of $\alpha = 70^0$ at $t_h = 350^0$ C has changed to a single center ignition when this temperature went down. The diagram concerning the effect of injection angle demonstrates that in the case of a single nozzle, low α results in higher p_z and $\frac{\Delta p}{\Delta \varphi}$. Reduction of α produces a drop of ignition lag τ, higher speed of flame spreading, and shorter combustion time. This increases the importance of mixing when α decreases. Rational design of the atomizer is determined by $\frac{\Delta p}{\Delta \varphi}$ and the economy, which depends on τ_c. A two-nozzle unit ensures a better start, but has design disadvantages. The increase of p_z and of $\frac{\Delta p}{\Delta \varphi}$ with the angular velocity is explained by higher speed of air charge, injection and flame spread. Greater values of the advance angle θ produce a fuel injection at lower temperatures. Therefore, the chemical and physical preparation of the fuel for the self-ignition is retarded. The investigations permit the fol-

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Investigating the process of ...

lowing conclusions: The change of surface temperature from 250 to 350°C has little effect on the process. Further increase of heating may cause undesirable abruptness in the operation. The angle β is the main design parameter. The alteration of speed is reflected on the course of ignition and combustion processes. The optimum advance angle of injection in the case of film mixing is somewhat greater than for volumetric mixing. Excess in this quantity increases the rigidity of operation. There are 7 figures.

ASSOCIATION: MVTU im. N.E. Baumana (MVTU im. N.E. Bauman)

SUBMITTED: October 31, 1960

Card 4/5

Investigating the process of ...

32240
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D221/D301

Fig. 2.

№	α	β	$l_ф$	d	k
1	50°	11°30′	7,5	0,42	1
2	80°	18°30′	14,5	0,42	1
3	70°	27°30′	22,0	0,42	1
4	60°	37°15′	29,0	0,42	1
5	90°/5°	11°30′—	7,5—	0,35/0,15	2

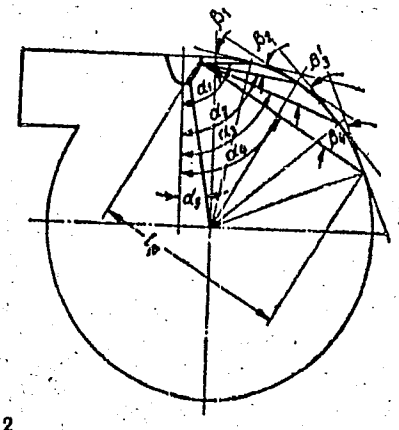


Рис. 2

Card 5/5

KAMZOLOVA, K. P.

AKOVBYAN, A.A., professor; KAMZOLOVA, K.P., dotsent (Tashkent)

Methods of teaching dermatovenereology in medical institutes. Vest. derm. i ven. 31 no.4:29-30 Jl-Ag '57. (MIRA 10:11)
(DERMATOLOGY, educ.
dermato-venereol., teaching methods in Russia)
(VENEREAL DISEASES
same)

KAMZOLOVA, K.P.; TERNOVENKO, K.M.

Armais Aristogesovich Akovbian. Med. zhur. Uzb. no.6:76-77 Je '60.
(MIRA 15:2)

(AKOVBIAN, ARMAIS ARISTOGESOVICH, 1900-)

AKOVBYAN, A.A., prof.; KAMZOLOVA, K.P., dotsent

Treatment vitiligo with Soviet psoralen. Vest.derm.i ven. no.5: 33-38 '61. (MIRA 14:12)

1. Iz kafedry kozhnykh i venericheskikh bolezney (zav. - prof. A.A. Akovbyan) Tashkentskogo meditsinskogo instituta.
(SKIN--DISEASES) (PSORALEN)

KUCHEROVA, N.F.; ZHUKOVA, I.G.; KAMZOLOVA, N.N.; PETRUCHENKO, M.I.; SHARKOVA, N.M.; KOCHETKOV, N.K.

Indole derivatives. Part 8: 9-Acyl-1,2,3,4, 4a, 9a-hexahydro-8-carbolines. Zhur.ob.khim. 31 no.3:930-936 Mr '61. (MIRA 14:3)

1. Nauchno-issledovatel'skiy institut farmakologii i khimioterapii.
(Pyridindole)

DREYMAN, E.Ya.; DMITRIYEVA, V.A.; KAMZOLOVA, S.G.; SHABAROVA, Z.A.; PROKOF'YEV, M.A.

Synthesis of o-aminoacyl derivatives of adenosine and study of their properties. Zhur.ob.khim. 31 no.12:3899-3905 D '61. (MIRA 15:2)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova. (Adenosine)

ACC NR: AP6033074 SOURCE CODE: UR/0218/66/031/005/0910/0917

AUTHOR: Shemyakin, M. F.; Bass, I. A.; Kamzolova, S. G.; Gorlenko, Zh. M.; Astaurova, O. B.; Khesin, R. B.

ORG: Order of Lenin Atomic Energy Institute im. I. V. Kurchatov, Moscow (Ordena Lenina institut atomnoy energii)

TITLE: Specificity of RNA synthesis in phage infection

SOURCE: Biokhimiya, v. 31, no. 5, 1966, 910-917

TOPIC TAGS: RNA, RNA synthesis, infective disease, bacteriophage, biochemistry, biosynthesis, ~~E. coli, T2 phage~~, polymerase, ~~RNA polymerase~~

ABSTRACT: The specificity of RNA synthesis in different phases of T2 bacteriophage infections of *E. Coli* B and in an *in vitro* RNA polymerase system was investigated using labled RNA. In early and late infectious stages, mRNA is synthesized largely on different regions of the T2 phage chromosome. Results of *in vitro* experiments show that RNA polymerase synthesizes RNA on the same regions of purified T2 phage which are active in intact cells during early stages of infection. Orig. art. has: 3 fig. and 1 table [LP]

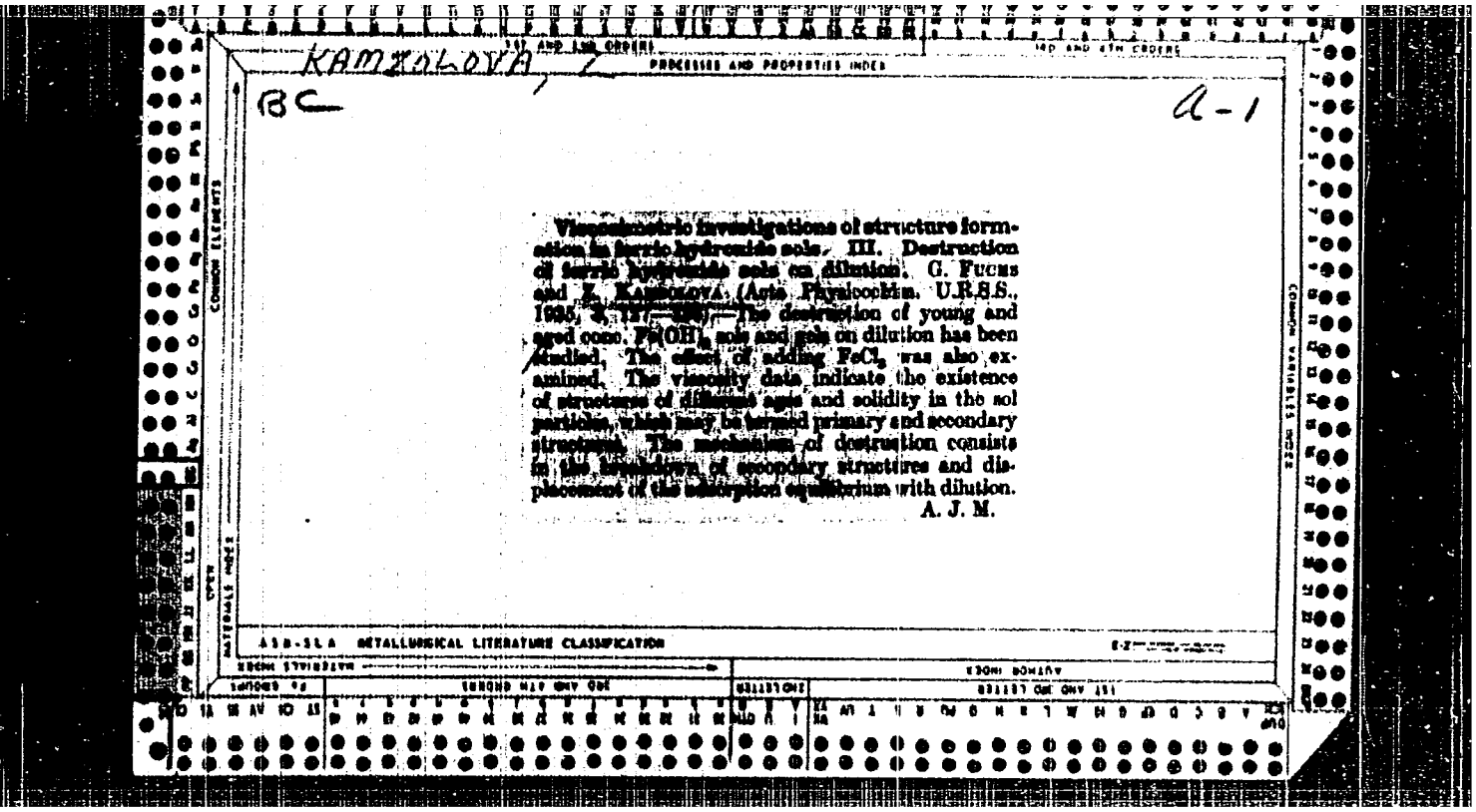
SUB CODE: 06/ SUBM DATE: 15Nov65/ ORIG REF: 004/ OTH REF: 014 [WA-50; CBE No. 14]

Card 1/1 UDC:547.963.3

VASILENKO, S.K.; KAMZOLOVA, S.G.; KNORRE, D.G.

Direct spectrophotometric method for the quantitative determination of the nucleotide composition of ribonucleic acids. Biokhimiia 27 no.1:142-148 Ja-F '62. (MIRA 15:5)

1. Institute of Organic Chemistry, the Siberia Branch of Academy of Sciences of the U.S.S.R., Novosibirsk.
(NUCLEOTIDES) (SPECTROPHOTOMETRY) (NUCLEIC ACIDS)



KAMZOLOVA, Z.

BC

a-1

Viscosimetric investigations of structure formation in ferric hydroxide sols. III. Destruction of ferric hydroxide sols on dilution. G. Fuchs and Z. Kamzolova. (Acta Physicochim. U.R.S.S., 1935, 3, 117—[illegible]) The destruction of young and aged conc. $Fe(OH)_3$ sols and gels on dilution has been studied. The effect of adding $FeCl_3$ was also examined. The viscosity data indicate the existence of structures of different ages and solidity in the sol particles, which may be termed primary and secondary structures. The mechanism of destruction consists in the breaking of secondary structures and displacement of the adsorption equilibrium with dilution.

A. J. M.

KAMZOLOVA, Z.P.

Mineralogy of "dry" clays of the Angren region. Zap.Uz.otd.Vses.min.ob-va no.2:104-108 '51. (MLRA 6:6)

(Angren Region--Clay)

S/129/61/000/004/010/012
E073/E535

AUTHORS: Shreyber, G. K., Candidate of Technical Sciences and Kan, A., Engineer

TITLE: Residual Stresses During Surface Hardening of Steel

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, 1961, No.4, pp.44-49

TEXT:: The authors attempted to determine analytically the magnitude and the character of residual stresses which arise during surface hardening in various zones of a cylindrical steel specimen. The residual thermal stresses in a solid cylindrical specimen can be determined by means of the following approximate formulae.

1. Hardened zone:

$$\sigma_{p_3} = \frac{\alpha TE}{4(1-\mu)}\left(1 + \frac{R_n^2}{R^2} - \frac{r^2}{R^2} - \frac{R_n^2}{r^2}\right), \quad (1) \qquad (1)$$

$$\sigma_{T_3} = -\frac{\alpha TE}{4(1-\mu)} \cdot \left(3\frac{r^2}{R^2} - \frac{R_n^2}{r^2} - \frac{R_n^2}{R^2} - 1\right), \quad (2) \qquad (2)$$

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Residual Stresses During Surface....

$$\sigma_{\alpha\alpha_3} = -\frac{\alpha TE}{2(1-\mu)}\left(2\frac{r^2}{R^2} - \frac{R_n^2}{R^2} - 1\right). \quad (3)$$

(3)

2. Transition and Unhardened zones:

$$\sigma_{\rho_n} = -\frac{\alpha TE}{4(1-\mu)} \times \frac{R^2 - R_n^2}{R^2}\left(1 - \frac{r^2}{R_n^2}\right), \quad (4)$$

(4)

$$\sigma_{T_n} = \frac{\alpha TE}{4(1-\mu)} \times \frac{R^2 - R_n^2}{R^2}\left(3\frac{r^2}{R_n^2} - 1\right), \quad (5)$$

(5)

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$$\sigma_{oc_n} = \frac{\alpha TE}{2(1-\mu)} \cdot \frac{R^2 - R_n^2}{R^2} \times \times \left(2\frac{r^2}{R_n^2} - 1\right), \quad (6)' \qquad (6)$$

In these equations σ_p, σ_T and σ_{oc} are, respectively, the radial, tangential and axial stresses, α - coefficient of linear expansion, μ - Poisson coefficient, E - Young's modulus, T - temperature difference between the internal and external layers of the cylinder, R - radius, as shown in Fig.1. In deriving these formulae the following assumptions were made:
1. Cooling is only from the external surface of the specimen;
2. the temperature distribution in the heated layer is symmetrical relative to the axis of the cylinder and is constant along its length;
3. the magnitudes of the axial deformations, which are sufficiently distant from the end faces, are the same and equal the relative axis deformation of a specimen of unit length;
4. the values of μ, α and E in the range of elastic deformations are independent of the temperature.

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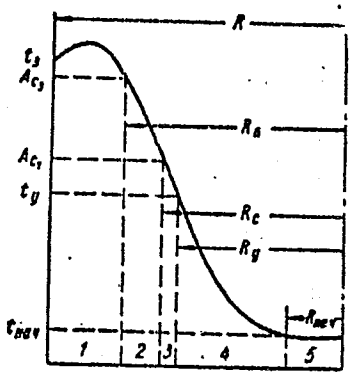
Analysis of the above formulae indicates that, during surface hardening of cylindrical components, the stresses in the surface will always consist of axial compression stresses and tangential residual thermal stresses, the magnitude of which depends on the thickness of the heated layer and its temperature. Fig.2 gives the dependence of the maximum tangential thermal residual stresses at the surface of the specimen as a function of F_z/F and αT. G. F. Golovin and M. M. Zamyatnin (Ref.3) have determined experimentally the total residual tangential stresses in 65 mm diameter specimens of Steel 45 after induction hardening to a depth of 6 mm and low temperature tempering; their results are reproduced in Fig.4. The results of approximate analytical and experimental determination of the stresses during surface hardening to a depth of 7 mm are reproduced in Fig.5. In another paper Golovin determined the total residual tangential stresses in a specimen (R = 32.5 mm) hardened to a depth of 5.5 mm. He determined the values R_n and R_c at 29 and 24.5 mm, respectively, from the hardness distribution curve along the cross-section. Comparison of the calculated results with experimental data are given in Fig.6. It is concluded that the

total stresses occurring during induction surface hardening can be determined with adequate accuracy by means of approximate analytical formulae. There are 6 figures and 8 references: all Soviet.

ASSOCIATION: Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti (Moscow Institute of the Petrochemical and Gas Industries)

Fig.1. Legend:
Sketch of the temperature distribution along the cross section of a steel cylindrical specimen heated for surface hardening (t_y - temperature at which the metal loses its elastic properties). $t_{нач} - t_{initial}$, $R_{нач} - R_{initial}$



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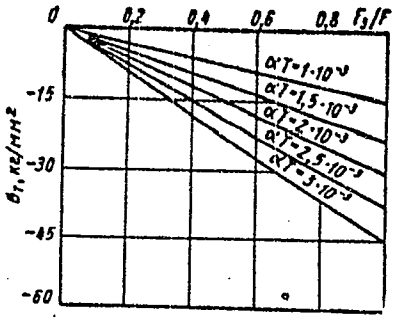
Residual Stresses During Surface....

Fig.2 Legend:

Dependence of the maximum tangential residual thermal stresses (σ_T, kg/mm^2) at the specimen surface on F_3/F and αT.

$F_3 = \pi (R^2 - R_n^2)$ - area of the layer heated for hardening,

$F = \pi \cdot R^2$ - total area of the specimen cross section.



Card 6/10

Residual Stresses During Surface...

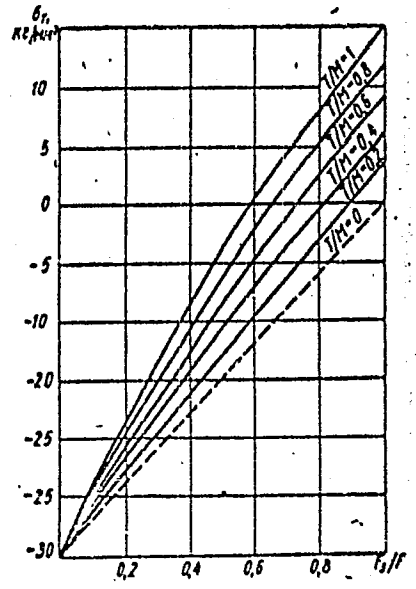


Fig.3. Legend:

Dependence of the tangential structural stresses (σ_T, kg/mm^2) at the specimen surface on the ratio F_3/F and T/M for $\ell_o = 10^{-3}$. M - temperature of the beginning of martensite transformation, ℓ_o - deformation associated with the martensite transformation.

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Residual Stresses During Surface....

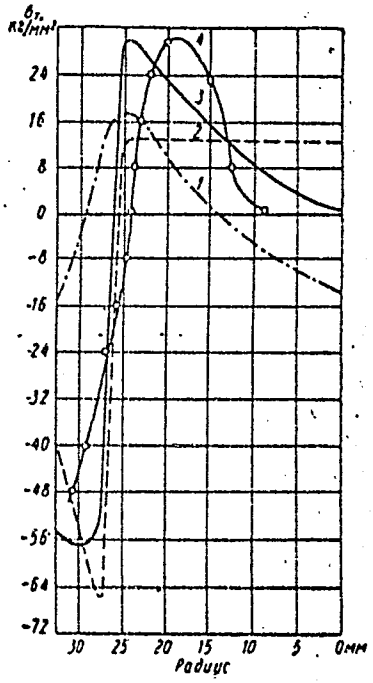

Fig.4. Legend:

Tangential stresses in the case of surface hardening to a depth of 6 mm. σ_T, kg/mm^2 vs. radius, mm.

Curve 1 - thermal stresses,
" 2 - structural stresses,
" 3 - total stresses (calculated)
" 4 - curve determined experimentally by G. F. Golovin.

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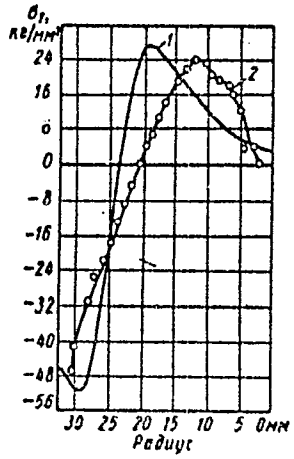
Fig.5. Legend:

Stresses in the case of surface hardening to a depth of 7 mm. σ_T, kg/mm^2 vs. radius, mm.

Curve 1 - calculated
" 2 - experimental



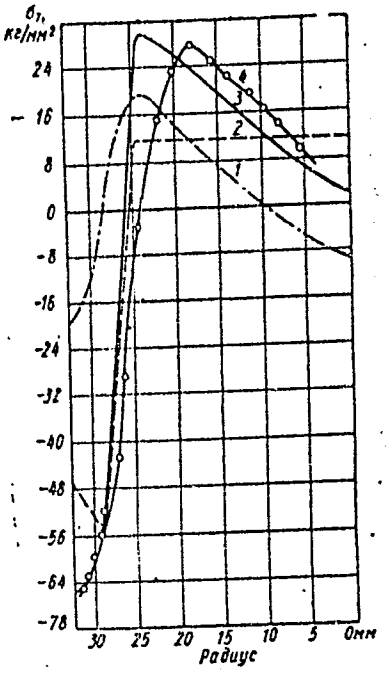
Card 9/10

Residual Stresses During Surface....

Fig.6. Legend:

Tangential stresses in the case of surface hardening to a depth of 5.5 mm, σ_T, kg/mm^2 vs. radius, mm.

Curve 1 - thermal stresses,
" 2 - structural stresses,
" 3 - total stresses (calculated)
" 4 - total stresses (experimentally determined).



Card 10/10

KAN, A.A.

New data on root aphids. Uzb. biol. zhur. 6 no.2:64-69 '62. (MIRA 15:4)

1. Institut zoologii i parazitologii AN UzSSR.
(UZBEKISTAN--PLANT LICE)

KAN, A.G.

Mud solution and its therapeutic value in the treatment of gynecological diseases. Akush. gin., Moskva no.5:83-84 Sept-Oct 1952. (CLML 23:2)

1. Professor.

KAN, A.G.

Thermal stresses and some problems in designing equipment using two-layer metal. Izv. vys. uchab. zav.; neft' i gaz 4 no.9: 83-89 '61. (MIRA 14:12)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni akademika I.M. Gubkina.

(Thermal stresses)

(Petroleum refineries--Equipment and supplies)